

Date: Monday, 10/22/2007 3:41:02 PM  
 User: Kim Johnston

## Process Sheet

50

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 350/355 AS X-TUBE AFT UNDER REVIEW  
 Job Number : 35278  
 Estimate Number : 12486  
 P.O. Number :  
 This Issue : 10/22/2007 S.O. No. :  
 Prsht Rev. : NC Part Number : D350748201  
 First Issue : 1 / Type : LANDING GEAR Drawing Number : N/A UNDER REVIEW  
 Previous Run : 35277 Drawing Revision : N/A  
 Material :  
 Due Date : 12/15/2007 Qty: 1 Um: Each  
 Written By :  
 Checked & Approved By :  
 Comment : Est Rev: A New Issue 06-07-05 JLM  
 Est Rev: B Update qty of MS21042L5 06-09-12 KJ

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



Comment: Photocopy bluefile &amp; type labels per PPPD350-748-201 CHG001

2.0 35278A X-TUBE AS 350/355 HI AFT UNDER REVIEW

Comment: Sub-Component X-TUBE AS 350/355 HI AFT  
D350-748-241 B

3.0 PACKAGING 1 PACKAGING RESOURCE #1

Comment: PACKAGING RESOURCE #1  
Pick Packing Kit

4.0 D35001 350 SADDLE

Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)  
350 SADDLE  
Batch: 31934

5.0 D35011 BUSHING

Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)  
BUSHING  
Batch: 35782

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Monday, 10/22/2007 3:41:02 PM  
User: Kim Johnston

## Process Sheet

Customer: .CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT UNDER REVIEW

Job Number: 35278

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

AN46A

Bolt



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Bolt

Batch: M105810

7.0

AN441A

bolt



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

bolt

Batch: M105940

8.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M105408

9.0

AN960JD416

Washer



Comment: Qty.: 32.0000 Each(s)/Unit Total : 32.0000 Each(s)

Washer

Batch: M106277

10.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Washer

Batch: M106654

11.0

MS21042L4

Nut



Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)

Nut

Batch: M105938

12.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Nut

Batch: M106277

PC 8/3/10 (1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: ☒ Date: 08/03/14

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:41:02 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT UNDER REVIEW

Job Number: 35278

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

5 08/03/12 (1)

14.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-201

Location: \_\_\_\_\_

PPP Rev: \_\_\_\_\_

A

8/3/12 (1)

15.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

5 08/03/12 (1)

Job Completion



2008/3/13 (1)

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Monday, 10/22/2007 3:41:10 PM  
 User: Kim Johnston

## Process Sheet

50

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : X-TUBE AS 350/355 HI AFT UNDER REVIEW  
 Job Number : 35278A  
 Estimate Number : 12483  
 P.O. Number : Part Number : D350748241  
 This Issue : 10/22/2007 S.O. No. : Drawing Number : D350-748-241 *WR Rev D 07.10.23*  
 Prsht Rev. : NC Project Number : N/A  
 First Issue : / / Type : LANDING GEAR Drawing Revision : *C*  
 Previous Run : 35277A Material :  
 Written By : Due Date : 12/15/2007 Qty: 1 Um: Each  
 Checked & Approved By : *07.10.23*  
 Comment : Est Rev: A New Issue 06-07-05 JLM  
 Est Rev: B Update cadplate process 06-09-12 KJ

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D350-748-241 CHG001

2.0 D6018125 Crosstube Material



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Crosstube Material

D6018-125

2.299" OD X 2.000" ID

Batch: *B27472**8F 07/11/05*

3.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand &amp; install plugs on both ends as per Folio FA647

2-Turn first side as per Folio FA647

3-Deburr &amp; Inspect for surface damage. Repair damage within limits as per Dwg D350-748-241.

*8F 07/11/05*

4.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

*8F 07/11/05*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Date: Monday, 10/22/2007 3:41:10 PM  
User: Kira Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35278A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA647

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-241.

3-Scribe part # as per Dwg D350-748-241

25 07/11/05

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

27 02/11/05

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

07/11/05 (1)

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Remove all Machining Marks

JD 7-11-12

9.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: 5031

Heat Treat to min 180 KSI As per Dwg D350-748-241

Sand Blast tube after Heat Treat

Possible Supplier: Vac Aero

Ensure Certificate of Conformity is attached

C26 7/11/13 0

10.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

7/12/11 SQ (1X)

11.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

6 07/12/12 (40)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:41:10 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35278A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description:

12.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1  
Oil inside of tube with LPS-3.

N/A

A/R LPS-3 Batch: \_\_\_\_\_

13.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D350-748-241 using CNC bender program D350A and Folio FT \_\_\_\_\_ EL 7-12-14

14.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

7-12-14 @

15.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Remove all marks from tube within limits of D350-748-241

2-Drill Tube as per Dwg D350-748-241 Using DT8876 Drill Jigs,  
Set-up drill table as per QSI 010

3-Deburr

4-Engrave Part # and Batch # as per Dwg D350-748-241

EL 7-12-14  
AWM 07-12-24

(P10) →

16.0

QC6

DIMENSIONAL CHECK



ENGINEERING  
APPROVAL

08.0.22



Comment: DIMENSIONAL CHECK

08/01/22 @

17.0

OUTSIDE SERV. 10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: SS10

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possible Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

08/01/23 @

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-241 PAR #: N/A Fault Category: Pod / Landing Gear NCR: Yes No DQA: Q Date: 08/03/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR: <u>08-012</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08/01/18	15.2	During inspection it was found that the hole location on the cuff was off alignment by 0.040". R.C. Hummer error	<u>UP</u> 08.01.21 PC Q51042	OPEN HOLES IN CUFF WITH Ø-DRILL. TEST ASSEMBLE TUBE AND GET ENG APPROVAL	<u>EL</u> 8-1-21	<u>S</u> 08/01/22	<u>UP</u> 08.01.21 PC Q51042	<u>S</u> 08/01/18
08/01/21	15	hole location <del>is off</del> on cuff is higher than 0.780" from centre to edge R.C. Hummer error	<u>UP</u> 08.01.22 PC Q51042	GRIND FACE of cuff to obtain Dim. of 0.780"	<u>AWM</u> 08.01.22	<u>S</u> 08/01/22	<u>UP</u> 08.01.22 PC Q51042	<u>S</u> 08/01/21

NOTE: Date & initial all entries See NCR 08-012

Date: Monday, 10/22/2007 3:41:10 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35278A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

18.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

19.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

20.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

2-Paint Outside of Tube as per Dart QSI 005 4.2

21.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

22.0

D35021

SUPPORT



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

SUPPORT

Batch: 32205

23.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2401 f(s)/Unit Total : 1.2401 f(s)

Abrasion Strip 7.10" long x2

Batch: 35900

24.0

ALS41032225

Insert



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Insert

Batch: 100489

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:41:10 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35278A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

AN960JD10

Washer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Washer

Batch: 105442

ml 08 03 06

26.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: 103478

ml 08 03 06

27.0

MS27039110

Screw



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Screw

Batch: 18836

ml 08 03 06

28.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire,Insert,then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-241 & QSI 035.

3-Install supports Using Dt8876 as per Dwg D350-748-241,Torque to 60-80 IN-LBS

ml 08 03 06 (1)

29.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

30.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-241

Location:

PPP Rev: PPP 35278

- 8/3/12

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: HD Date: 28/03/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Date: Monday, 10/22/2007 3:41:10 PM

User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35278A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

31.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

12/08/03/14 (1)

Job Completion



mi 2008/3/13 (1)

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	35278A
<b>Description:</b> Crosstube Assembly (AS350/355 High Aft)		<b>Part Number:</b>	D350-748-241
<b>Inspection Dwg:</b> D350-748-241 Rev: D		<b>Page 1 of 1</b>	

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

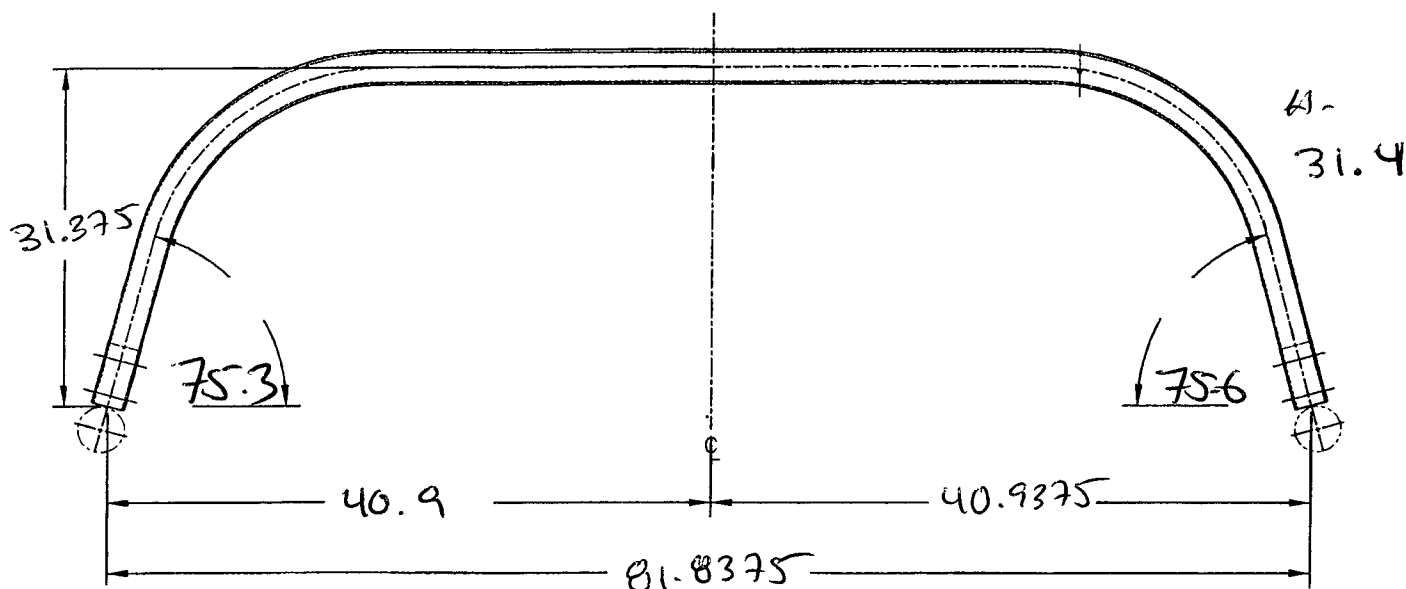
Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.241	/			
	2.180	+0.005/-0.000	2.181	/			
	2.180	+0.005/-0.000	2.181	/			
	2.208	+0.005/-0.000	2.209	/			
	2.234	+0.005/-0.000	2.235	/			
	2.253	+0.005/-0.000	2.254	/			
	2.272	+0.005/-0.000	2.273	/			
	2.299	+0.005/-0.000	2.301	/			
	0.063	+/-0.010	.063	/			
	4.26	+/-0.030	4.26	/			
	R0.063	+/-0.010	.063	/			
	R0.50	+/-0.030	.500	/			
SIDE B	2.240	+0.005/-0.000	2.240				
	2.180	+0.005/-0.000	2.180				
	2.180	+0.005/-0.000	2.180				
	2.208	+0.005/-0.000	2.208				
	2.234	+0.005/-0.000	2.234				
	2.253	+0.005/-0.000	2.253				
	2.272	+0.005/-0.000	2.272				
	2.299	+0.005/-0.000	2.299				
	0.063	+/-0.010	.063				
	4.26	+/-0.030	4.26				
	R0.063	+/-0.010	.063				
	R0.50	+/-0.030	.500				
	122.70	+/-0.060	122.700				

<b>Measured by:</b> S.F.	<b>Audited by:</b> [Signature]	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 07/11/05	<b>Date:</b> 07/11/05	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	07.01.17	New Issue (P/O D350-748-201)	KJ/JLM	

DART AEROSPACE LTD		Work Order:	35278A
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241 Rev: D		Page 1 of 1	

Required Dimension	Min	Max
Height	31.22	31.48
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06



Comments
Height is slightly un-even but well within tolerance

QC15 Inspection	
Date	07-12-19

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	



**DART**

DESIGN 90	DRAWN BY 90	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED H	APPROVED H	DRAWING NO. D350-748-241	REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE NTS
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6018-125 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.	

**RELEASED**

06.10.31 H

QTY	P/N	DESCRIPTION
X	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
1	D6018-125	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

**D350-748-141 CROSSTUBE:**

- 1) MATERIAL: MANUFACTURED FROM D6018-125 OR D6015-125  
FINISHED LENGTH =  $122.70 \pm 0.06$
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR  $\varnothing 0.297$  HOLE.

**UNDER REVIEW**

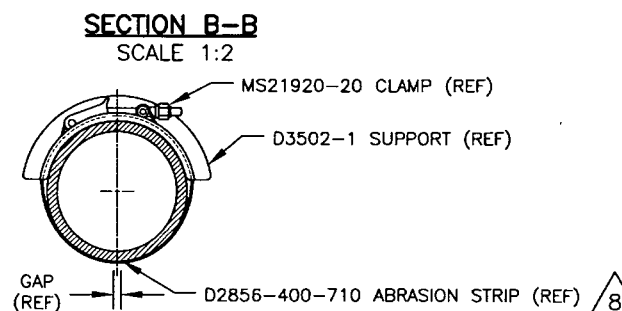
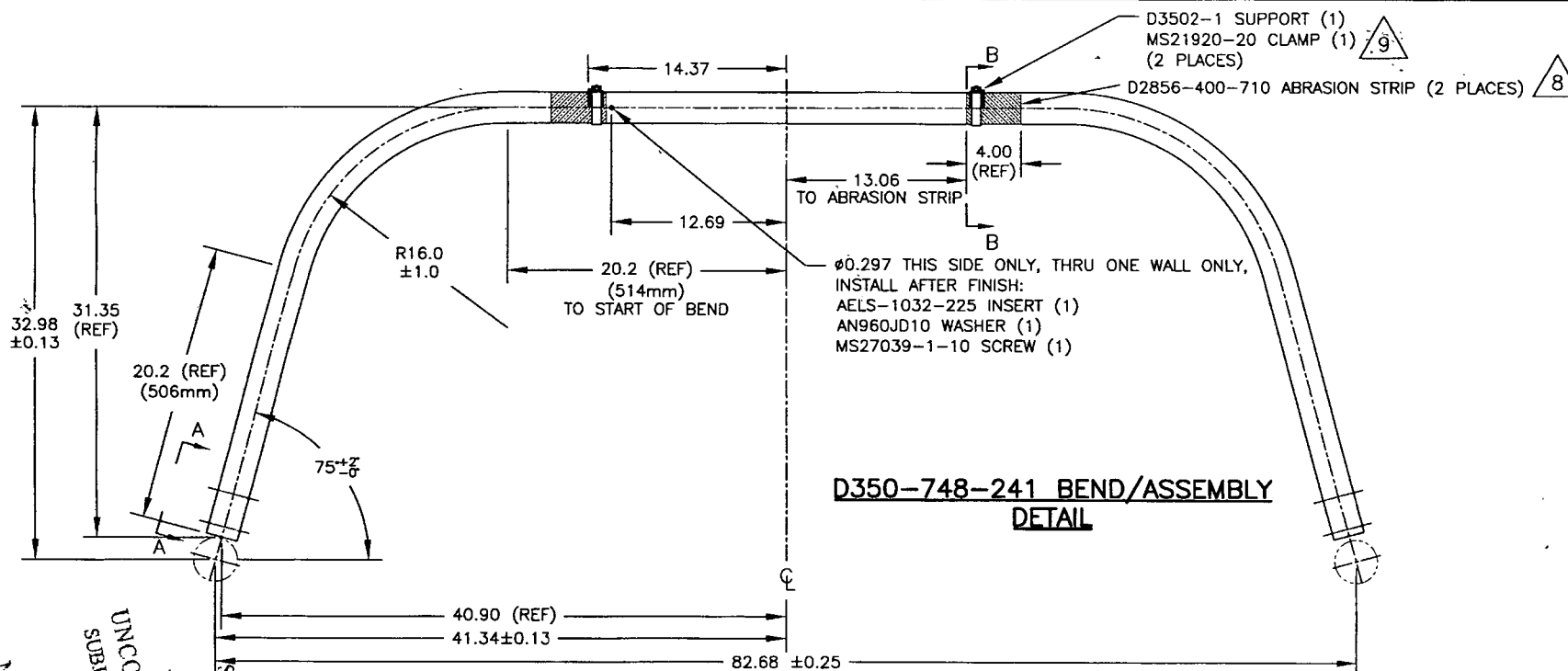
07.02/16 H

CUT FOR REDUCED  
X 07.07.22

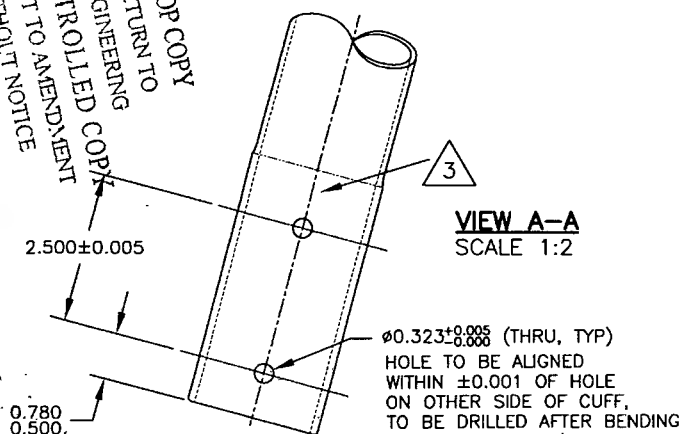
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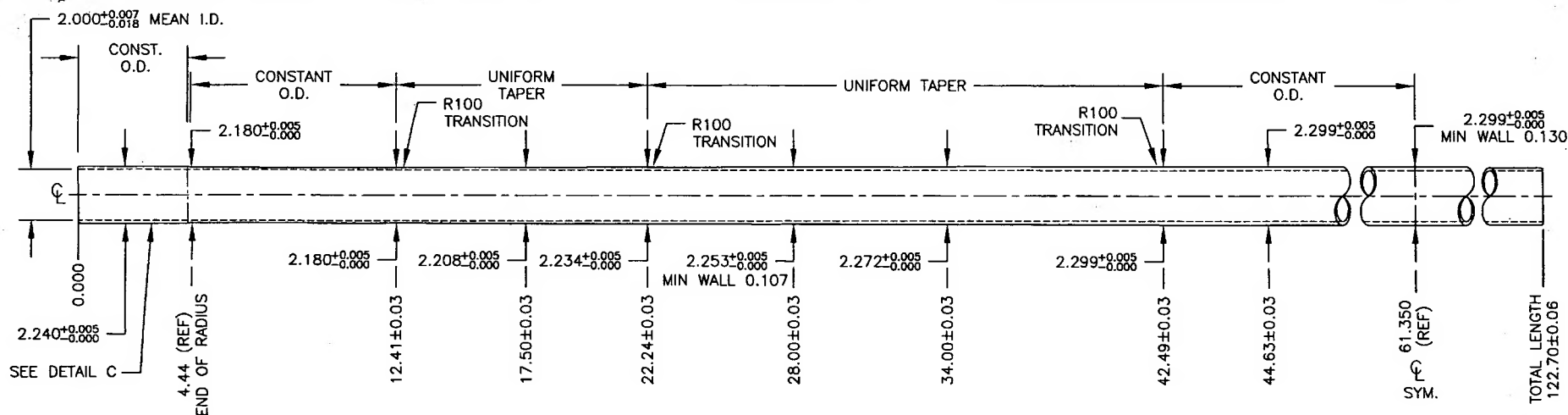


UNDER REVIEW  
07.02/16/17  
CUFF BEING REWORKED  
06.10.31  
RELEASED  
06.10.31

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		DATE	06.10.31	TITLE		CROSSTUBE (AS 350/355 HI AFT)	SCALE 1:8

761  
804





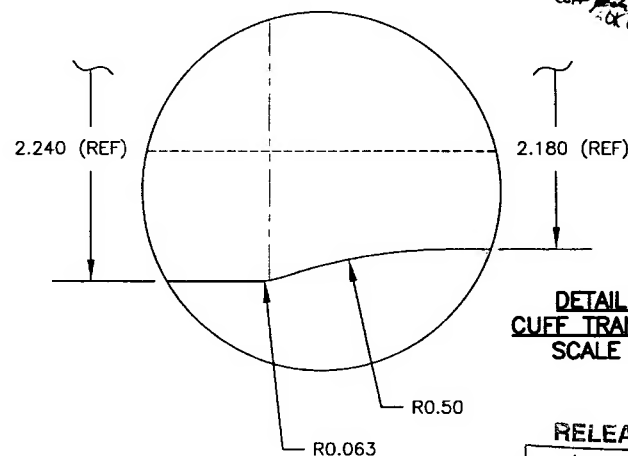
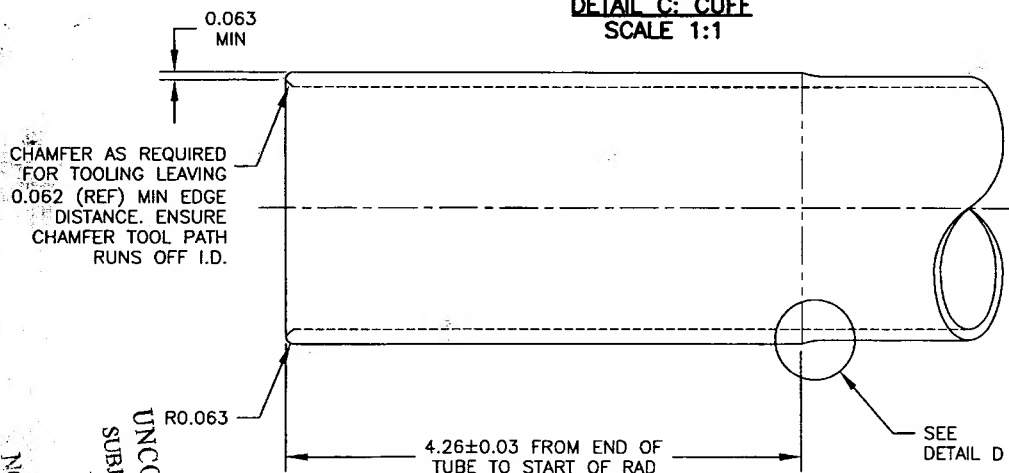
### D350-748-241 MACHINING DETAIL

UNDER REVIEW

07.02/16/11

07.02/16/11

#### DETAIL C: CUFF SCALE 1:1



#### DETAIL D: CUFF TRANSITION SCALE 9:1

RELEASED

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CHECKED	#	APPROVED	#	DRAWING NO.	REV. 0
				D350-748-241	SHEET 3 OF 3
DATE	06.10.31	TITLE	CROSSTUBE (AS 350/355 HI AFT)	SCALE	1:4

NO. 352784

WORK ORDER

352784

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VAC AERO  
INTERNATIONAL INC.

RELEASE NOTE

GST No.: R105468102

OAK 92999-1

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1371 SPEERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
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OAKVILLE, ONTARIO  
CANADA L6L 6J4  
TEL: (905) 827-7377 FAX: (905) 827-1380

☐ QUEBEC DIVISION  
7450 RUE VERITÉ STREET, ST. LAURENT, QUÉBEC  
CANADA H4S 1C5  
TEL: (514) 334-4240 FAX: (514) 334-6269

12/06/2007

MM/DD/YYYY

PAGE: 1

BILL TO: 1DAR01  
DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

K5A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
12/06/2007		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
PO00005031		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
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D350-748

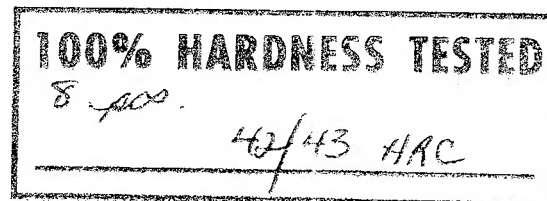
EA 8 8

Process Specifications: Procedure: 4353  
HEAT TREATED TO 180 KSI PER AMS 2759-1D  
100% HARDNESS TESTED AS PER ASTM E-18, HRC 40-45  
MATERIAL: 4130

ONE EACH OF:

D350-748-141B35272A, D350-748-141B35273A,  
D350-748-141B35274A, D350-748-141B35275A,  
D350-748-241B35276A, D350-748-241B35277A,  
D350-748-241B35278A, D350-748-241B35279A

NOTE: SAND BLAST TUBE AFTER HEAT TREAT



DR



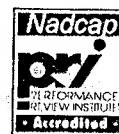
I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

*Debra Robinson*  
Authorized Q.C. Inspector



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS



HEAT  
TREATING

## Chris Provencal

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** January 21, 2008 5:20 PM  
**To:** 'Chris Provencal'  
**Cc:** 'Mike Petsche'  
**Subject:** RE: NCR D350-748-141/-241

Chris,

As per our discussions, your course of action as outlined below is acceptable to me.  
I agree ... an NCR must be raised to prevent this from happening in the future.

David

---

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** Monday, January 21, 2008 2:36 PM  
**To:** 'David Shepherd'  
**Cc:** 'Mike Petsche'  
**Subject:** NCR D350-748-141/-241

David,

RE: The xtube cuff holes on several D350-748-141/-241 were misaligned by as much as 0.040". The misalignment is between the hole pattern on the inboard and outboard side of the cuffs, ie. The dimension from the bottom of the xtube to the center hole (0.500-0.780 on dwg) is different from inboard to outboard side.

We opened the holes on the worst-case xtube with a q-drill to 0.332 diam (dwg is p-drill or 0.323). The tubes could be assembled in a complete gear. He had to tap a few bolts through, but not nothing with any large amount of effort. We will assemble each affected tube and verify them.

The non-conforming xtube is the aft xtube in the attached picture. As this is an unusual deviation, we thought it best to ask for your opinion. Is this acceptable? An NCR has been initiated to figure out why this happened.

Thanks,  
-Chris

No virus found in this incoming message.  
Checked by AVG Free Edition.  
Version: 7.5.516 / Virus Database: 269.19.8/1235 - Release Date: 1/21/2008 9:39 AM

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Checked by AVG Free Edition.  
Version: 7.5.516 / Virus Database: 269.19.8/1235 - Release Date: 1/21/2008 9:39 AM

**CERTIFICATE OF  
CONFORMANCE**

**CADORATH PLATING CO. LTD.  
2150 LOGAN AVENUE  
WINNIPEG, MANITOBA R2J-0J1**

**DATE: Feb-28-2008**

**CONSIGNED TO: Dart Aerospace Ltd.  
1270 Aberdeen St.  
Hawksbury, ON K6A 1K7**

**W/O #: 73545**

**INVOICE #: 38152**

**CONTRACT OR  
PURCHASE ORDER # 5510**

**DESCRIPTION: SKID**

**QTY 1**

**P/N # D350748241**

**S/N # B35278**

**CADMIUM PLATE IAW AMS-QQ-P-416 TYPE 2 CLASS 1. MPI IAW  
ASTM-E-1444. BAKE HEAT CHART #8776 & #8884.**

**CERTIFICATE: I certify that the items indicated here on have  
been inspected and tested and conform to all specifications  
and requirements detailed on the contract or purchase order.**

**Approved Inspector:**

*William Maruszynski*

